

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I (claims 1-13, 20-23) in the reply filed on 7-10-2009 is acknowledged.
2. The non-elected claims 14-19 were canceled by applicant in the response filed on 7-10-2009.

### ***Claim Objections***

3. Claim 1 objected to because of the following informalities: In lines 4-5, the phrase "comprising at least one organometallic compound and in then converting" (emphasis added) appears to have incorrect grammar. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1-13, 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 3 of claim 1, the applicants recite "said process consisting in" (emphasis added). In lines 6-7, the applicants further recite "said process being characterized in" (emphasis added). The examiner interprets the transitional "consisting in" is synonymous with the transitional phrase "consisting of". According to the MPEP

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2111.03 “The transitional phrase “consisting of” excludes any element, step, or ingredient not specified in the claim.” The transitional phrase “characterized in” is inclusive or open-ended and does not exclude additional, unrecited elements or method steps (See MPEP 2111.03). Once the applicants narrow the claim by reciting the “process consisting in” in line 3, applicant cannot broaden the claim by using the open-ended transitional phrase “characterized in”. Claim 1 is indefinite because it is unclear whether the process is open-ended or not.

Claims 2-13 are indefinite because they directly or indirectly depend on indefinite claim 1.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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7. Claims 1-4, 7-11, 13, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heffer (US 3,850,668) in view of LaBarge et al. (US 2004/0077494 A1).

Respect to claim 1, Heffer discloses a process for the formation of a coating of metal oxides comprising at least one precious metal from Group VIII (i.e. ruthenium) of the Periodic Table of the elements, on an electrically conductive substrate; the said process comprising:

applying, to the said substrate, a solution comprising at least one organometallic compound (i.e. ruthenium acetylacetonate) and then converting the said at least one organometallic compound to at least one metal oxide by means of a heat treatment; the said process is characterized in that the sole solution applied to the said substrate is a non-aqueous solution of one or more metal acetylacetonates dissolved in a one or more solvents which specifically dissolve said one or more metal acetylacetonates, the one or more solvents being chloromethanes (i.e. chloroform) and mixtures of two or more thereof (See col. 1-col. 3).

Heffer fails to disclose the substrate is made of steel or iron. However, Heffer clearly disclose the substrate is porous and comprise carbon (col. 1 lines 25-40).

LaBarge discloses the use porous substrate include stainless steel or carbide material (paragraph 0012). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Heffer in view of LaBarge by using steel substrate because equivalent and substitution of one for the other would produce an expected result.

Respect to claims 2-4, Heffer discloses the precious metal is ruthenium (abstract, col. 2 lines 15-30). Respect to claim 7-8, Heffer discloses the solvent is chloroform and the metal acetylacetonate solution is obtained by dissolution of the metal acetylacetonate in one solvent (i.e. chloroform) (See col. 2 lines 15-30, lines 51-52).

Respect to claim 9, Heffer disclose the solution of ruthenium acetylacetonate is obtained by dissolution of ruthenium acetylacetonate in a mixture of one solvent (i.e. chloroform; See col. 2 lines 20-30, lines 50-55). Respect to claim 10, Heffer discloses the substrate is pretreated in the first stage (col. 1 lines 25-29, col. 2 lines 43-50) in the first stage, then in a second stage the solution comprise metal acetylacetonate is deposited on the pre-treated substrate and the substrate is dried and then calcimined (See col. 2 line 56 to col. 3 line 5).

Respect to claim 11, Heffer disclose the drying is carried out at a temperature of 100 °C (col. 2 lines 56-60, read on "up to 150 °C"). Respect to claim 13 and 23, Heffer discloses the second stage is repeated more than once (col. 3 lines 4-7).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heffer and LaBarge as applied to claims 1-4, 7-11, 13, 23 above, and further in view of Hunt et al. (US 6,132,653).

Respect to claim 5, Heffer and LaBarge fail to disclose the solvent is alcohol selected from ethanol and isopropanol. However, Heffer clearly discloses to use ruthenium acetylacetonate with an organic solvent. Hunt teaches to use solvent includes ethanol, isopropanol to dissolve metal acetylacetonate compound (col. 17 lines 45 to col. 18 line 15). It would have been obvious to one having ordinary skill in the art,

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at the time of invention, to modify Heffer and LaBarge in view of Hunt by using ethanol or isopropanol because it helps to aid the solubility of a polar solute. Further, these solvent are low cost solvent.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heffer and LaBarge as applied to claims 1-4, 7-11, 13, 23 above, and further in view of Iwasawa et al. (US 5,864,051).

Respect to claim 6, Heffer and LaBarge fail to disclose the solvent is acetone. However, Heffer clearly discloses to use ruthenium acetylacetonate with an organic solvent. Iwasawa teaches to use metal previous metal acetylacetonate compound including ruthenium acetylacetonate or platinum acetylacetonate that is dissolved in acetone solvent (col. 2 lines 1145-62). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Heffer and LaBarge in view of Iwasawa by using acetone as a solvent because equivalent and substitution of one for the other would produce an expected result.

10. Claims 20, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heffer and LaBarge as applied to claims 1-4, 7-11, 13, 23 above, and further in view of Sharma et al. (US 2007/0184208 A1).

Respect to claim 20, Heffer and LaBarge fail to disclose that at least one precious metal from Group VIII of the periodic Table of the elements is combined with titanium, zirconium or mixture thereof. However, Heffer clearly teaches to use precious metal from Group VIII. Sharma teaches to use precious metal precursor mixture include metal from Group VIII and zirconium in order to provide a wide range of suitable metallic

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compounds as well as a flexibility in choice of metal blends and alloy composition (paragraph 0063-0064). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Heffer and LaBarge in view of Sharma by using metal mixture comprises zirconium because it provides a wide range of suitable metallic compounds as well as a flexibility in choice of metal blends and alloy composition.

Respect to claim 21, Sharma teaches to use several metal acetylacetonates obtained by mixing solution comprising metal acetylacetonate (paragraph 0063-0064).

### ***Allowable Subject Matter***

11. Claims 12, 22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: Respect to claim 12, the cited prior arts fail to suggest or disclose that the substrate coated by the one or more metal acetylacetonates is calcined under air or an inert gas enriched with oxygen, at a temperature at least equal to 300°C, for a period of time ranging from 10 minutes to 2 hours in combination with all other limitation in the claim. Respect to claim 22, the cited prior arts fail to suggest or disclose that the substrate coated by the one or more metal acetylacetonates is calcined under air or an inert gas enriched with oxygen, at a temperature of between 400°C and 600°C, for a period of time ranging from 10 minutes to 2 hours in combination with all other limitation in the claim.

### ***Conclusion***

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571)272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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